Air Force Studies And Analyses

WHITE PAPER

FORWARD AIR CONTROLLERS

1985 - 1995

TACTICAL SYSTEMS DIVISION

20 FEBRUARY 1985

FORWARD AIR CONTROLLERS 1985 - 1995

EXECUTIVE SUMMARY

1. This paper reviews the historical use of Forward Air Controllers (FACs), and examines the air and ground FAC's abilities to function in the threat environments of today and 1995. Two major assumptions were made:

- Close Air Support (CAS) will continue to be an integral part of tactical air support.

- The requirement for closely coordinated joint Army/Air Force operations will increase as the Army comes on-line with lighter combat units, greater numbers of sophisticated attack helicopters, and moves toward a doctrine which places increased emphasis on maneuver.

2. The FAC team (air and ground FAC) performs a function that today is integral to the effective accomplishment of the CAS mission. Some of the tasks performed by the FAC team are: requesting air support; providing current target information to fighters; directing the pilot's/weapon's eyes/sensors on the target; aiding in weapons delivery; and assessing the need for reattack. The FAC team's ability to support the CAS mission is related to the threat environment in which it operates.

3. In order to evaluate the capabilities of the future FAC team three alternatives were investigated.

a. Alternative #1 placed today's FAC team in 1995 moderate and high threat environments. We found that even in the most intense threat environment, the FAC team could function and survive, although its effectiveness was significantly degraded in the high threat environment.

b. Alternative #2 assumed the FAC team is aided by technologically advanced systems (i.e. EJS, GPS, ATHS, DCT, Aquila). These systems will certainly expand the capability of the FAC team in a CAS environment to accurately identify, mark, and otherwise aid fighters in destroying targets in the near proximity of friendly forces.

c. Alternative #3 examines the possibility of the Army assuming the role of the battalion FAC team. Presently the Army is developing and acquiring attack helicopters which will be very capable on the battlefield. Many of the steps and tasks required for the employment of these new weapons systems will be very similar to those performed by the FAC team. The brigade, division, and corps TACPs could still be manned by Air Force personnel who would continue to provide the required advice and coordination.

4. The final section of the paper assumes that in the future a FAC aircraft will be required and a subjective evaluation of possible alternative aircraft is presented.

5. Following are the conclusions of this white paper:

A. The FAC team is effective and vital today. The tasks performed by the FAC will still need to be accomplished in 1995.

B. The FAC team can function, with varying levels of effectiveness, in all future threat environments.

C. Technological enhancements, particularly those that improve target location estimation and data transfer to fire units, could greatly increase the FAC team's effectiveness.

D. Assuming the successful development and equipage of Army units and Air Force fighters with the technical means to accurately fix and transfer target location information then the Army may be capable of performing the role of the battalion FAC. However, if this is so, then the brigade and division ALOs would still be required -- in fact, more may be needed.

FORWARD AIR CONTROLLERS - 1985 TO 1995

INTRODUCTION

The purpose of this white paper is to examine, in light of future technological advances, alternatives for controlling Close Air Support (CAS) in 1995. The key issue addressed is the ability of the airborne and ground Forward Air Controllers (FACs) to help provide tactical air support to Army ground units.

The paper is organized into four sections. Section I provides background information on the historical use of FACs, discusses forward air control within the Tactical Air Control System (TACS), and describes FAC tasks and their integration with the US Army scheme of maneuver. Section II addresses expected conventional threat environments and depicts the role of today's FAC Team (air FAC and ground FAC) in low, medium, and high threat conflicts. Section III lists some future systems/capabilities which, by 1995, might have an effect on the FAC team. In light of these possible technological advances, three alternative approaches to performing the FAC mission are offered. Section IV suggests capabilities that a FAC aircraft should have and then subjectively evaluates several aircraft in their ability to fill the air FAC role.

Due to the subject's large scope, this brief paper relied on many assumptions. Two major assumptions are listed below.

- Close Air Support, as we know it today, will continue to be an integral part of Tactical Air Support.

- The requirement for closely coordinated joint Army/Air Force operations will increase as the Army comes on-line with lighter combat units, greater numbers of sophisticated attack helicopters, and moves toward a doctrine which places increased emphasis on maneuver.

SECTION I - BACKGROUND

HISTORY

In the past we have seen the need to accomplish the CAS role in almost all military conflicts. During World War II, fighter pilots were assigned to ground units, given a radio, and then tasked with helping the fighter-bombers identify hostile targets in a close air support environment. These initial ground FACs (called "Rover Joes") proved to be effective, but were limited in visibility, mobility, and communication capability. To overcome these shortfalls many FACs, by war's end, had evolved to performing their role from the air. The FAC force was dismantled at the end of the war.

The need for the FAC was again realized during the first few weeks of the Korean Conflict. On several occasions large ground battles were fought while fighter aircraft, loaded with bombs, orbited overhead. The pilots were relatively ineffective in delivering their ordnance because they often could not distinguish friend from foe. The air and ground FACs were established to help get the bombs on the right target. As in WW II, the FAC team was disbanded at the end of the Korean Conflict.

In Vietnam the need for FACs to aid in close air support became immediately apparent. This time, however, the Air Force and Army made formal agreements and established Tactical Air Control Parties (TACPs). The FAC force and concept of operations has changed little since.

The Israelis quickly learned the importance of CAS when they fought the Syrians in 1982. Relatively unprepared for such large numbers of CAS sorties, the Israelis found that identifying and marking targets was their most difficult close air support problem. Much like us, they developed and refined the roles of the ground and air FAC in active combat.

In the 1983 Grenada invasion, ground FACs were often key players in directing the destruction of enemy strongholds. They identified enemy targets and directed firepower in close proximity of friendly troops with pinpoint accuracy. Without the FACs, it is believed that friendly losses would have been higher, and gaining control of the island may have taken considerably longer.

DEFINITIONS

The outcome of modern wars has depended on air and land forces effectively working together. Close air support is one part of that joint effort. It is air action requested by the ground commander against hostile ground targets. Specifically, CAS is defined in JCS Pub 1 as:

> "Air attacks against hostile targets that are in close proximity to friendly surface forces. It requires detailed integration with fire and maneuver units."

To be effective in different threat scenarios and changing strategies of war, CAS must be able to support counter-offensive, defensive, and offensive ground operations with preplanned or immediate attacks. These operations, as illustrated in Figure 1, may occur not only along the main battle area but also within our own rear area or deep within enemy territory.

Effective close air support missions require access to the battle area, timely intelligence information, detailed integration, and accurate weapons delivery. Forward air controllers traditionally have provided the required coordination and control of close air support and have integrated the air-delivered firepower with that of friendly ground forces. JCS Pub 1 states that a FAC is:

> "A qualified individual who, from a forward position on the ground and/or in the air, directs the action of combat aircraft engaged in close air support of land forces."

The FAC (ground and/or air), is a key figure in the final employment of CAS firepower. His ultimate purpose is to increase enemy kills per sortie while minimizing friendly losses to both aircraft and ground units.

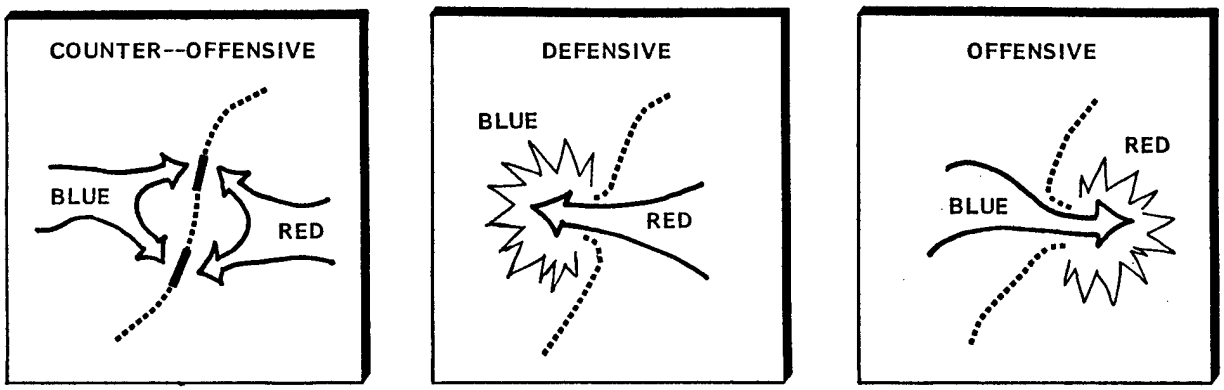
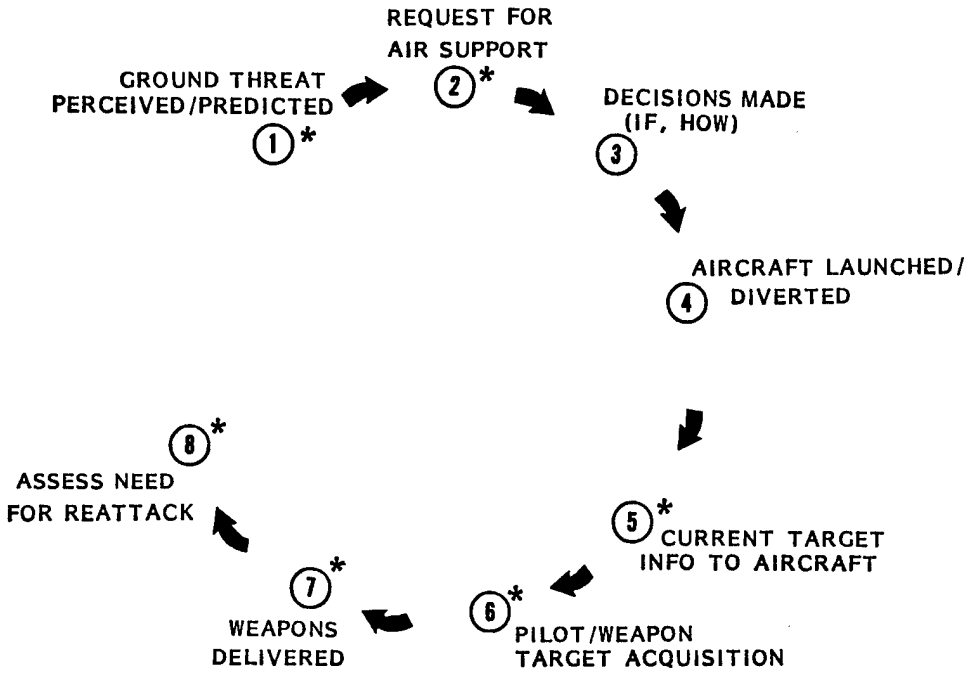


FIGURE 1 - Areas Requiring Close Air Support

OPERATIONS

The Tactical Air Control System (TACS) is designed to provide the Air Force Component Commander (AFCC) centralized control of his forces. The system is used for current planning, sortie allocation, force tasking and control. The missions of counterair, air interdiction, close air support, tactical reconnaissance, tactical airlift, and special operations are coordinated and integrated through the TACS. The Tactical Air Control Party (TACP) is an Air Force control element of the TACS that supports and is stationed with Army combat units. A TACP is located with corps, division, brigade, and battalion units and provides the necessary interface between the Army unit and the TACS. FAC force structure is designed to normally provide two forward air controllers (pilot qualified) for each Army maneuver battalion. Typically, one FAC deploys with the battalion and operates from the ground. The other FAC is assigned to a Tactical Air Support Squadron (TASS) and operates from the air. As a team, the ground and air FACs control close air support aircraft and integrate air strikes with the fire and maneuver of ground forces. The operational steps that occur in the CAS cycle are shown in Figure 2. The FAC team plays a major role in those steps marked with an asterisk.



*ACTIONS WHERE THE FAC TEAM PARTICIPATES

FIGURE 2 - Close Air Support Cycle

In most instances the cycle would be less effective if a FAC were not involved. Those steps in the CAS cycle directly involving a forward air controller are listed below. Specific tasks of the FAC (AFM 2-7) are underlined.

- Ground Threat Perceived/Predicted. The air FAC, using area surveillance, increases the commander's situational awareness, enabling the ground commander to better predict enemy moves, vulnerabilities, and timing. He can help generate specific targets for attack. The ground FAC advises the ground commander on Air Force capabilities.

- Request for Air Support. The FAC, usually from a ground position, operates the air request net when he calls higher headquarters for air strike support.

- Aircraft Receives Current Target Information. The FAC uses air-to-air and ground-to-air communications to provide current target location and status to the attack aircraft.

- Pilot/Weapon Target Acquisition. The air or ground FAC marks the target for the pilot/weapon using rockets, flares, a laser, precise coordinates, or verbal description.

- Weapons Delivered. The FAC (ground and air) coordinates with army fire support elements to integrate the attack with ground fire and attack helicopters. Also, the FAC team has indirect and direct control over the CAS aircraft, usually with clearance and abort authority.

- Assess Need for Reattack. Both the ground and air FAC may have the capability to provide immediate Battle Damage Assessment (BDA).

SECTION II - The FAC Team Today

THREAT

In order to evaluate the capabilities of the FAC it is necessary to place him in the environment where he is expected to operate. Current operational concepts call for the use of FACs (air and ground) in all conventional scenarios from guerrilla war to the most intense areas of the Central Region. Therefore this paper addresses the FAC team in low, moderate, and high threat environments. First, however, it should be noted that a given level of threat is not necessarily indicative of a particular theater of operations (i.e. Korea a moderate threat/Europe a high threat). In reality, the threat level in a given theater will vary with the time of day, length of the war, and location on the battlefield. Figure 3 notionally illustrates how the level of threat may fluctuate relative to time and/or place on the battlefield. Note that a European conflict is not expected to be "high threat" in all places or at all times. Likewise, Korea, commonly characterized as moderate threat, would also have areas along the battlefield that could be either low or high threat. Therefore, in the remainder of this paper we will refer to levels of threat rather than to a specific theater of operation.

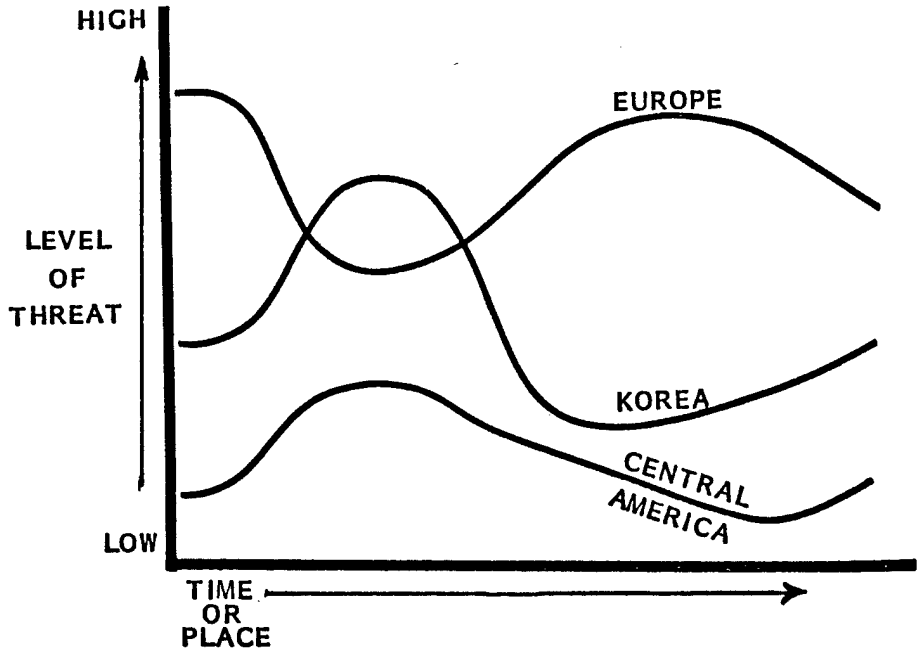


FIGURE 3 - CONCEPTUAL OR TYPICAL CHANGING LEVELS OF THREAT

FAC CAPABILITIES

Figures 4, 5, and 6 depict the FAC team in low, moderate, and high threat areas respectively. The air FAC is equipped with today's systems (OV-10, O-2, OA-37, etc.) and faces a variety of surface-to-air and air-to-air threats.

In the Low Threat Area (Figure 4) note that the FAC team can function relatively freely and that all FAC tasks, as previously described, can be accomplished. A low threat environment is characterized by small arms fire and might be likened to Grenada or possibly to areas in moderate and high threat theaters where the enemy's defensive capabilities have been exhausted or neutralized. In a low threat environment the air FAC's operating envelope is virtually unrestricted. He is able to maneuver over the target area and even perform some additional tasks such as area surveillance and search and rescue assistance.

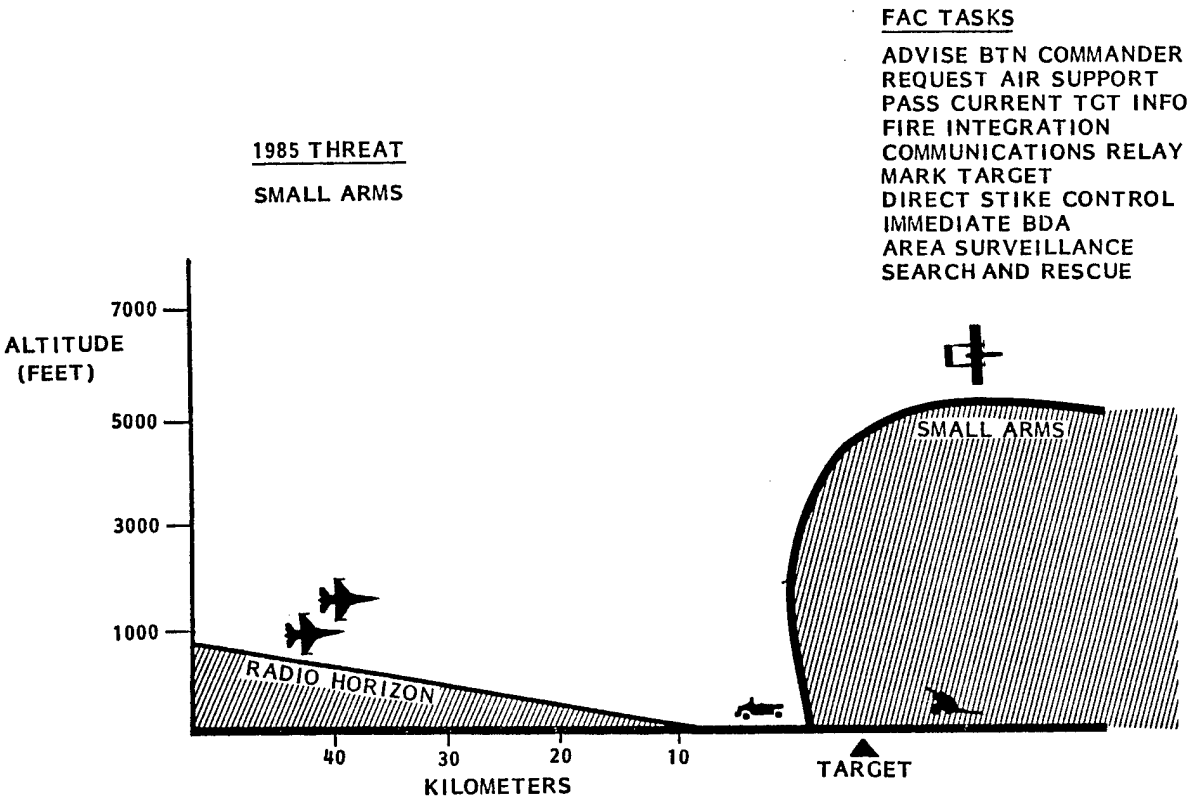


FIGURE 4 - LOW THREAT AREA (1985)

In Figure 5, Moderate Threat Area, the surface-to-air weapons are more sophisticated and a limited enemy air-to-air capability exists. The air FAC's safe operating envelope shrinks to a point where his contribution to FAC team's task accomplishment is degraded. The additional tasks such as area surveillance and search and rescue are no longer possible. Also, the FAC team's ability to mark the target, direct strike control, and assess battle damage are moderately degraded. The air FAC can no longer freely maneuver in the target area, and the ground FAC is restricted by the inherent limitations of visibility, mobility, and communication capability. Although, as a team, they are somewhat limited, the air and ground FACs can still perform many important tasks and can be key players in successful CAS accomplishment.

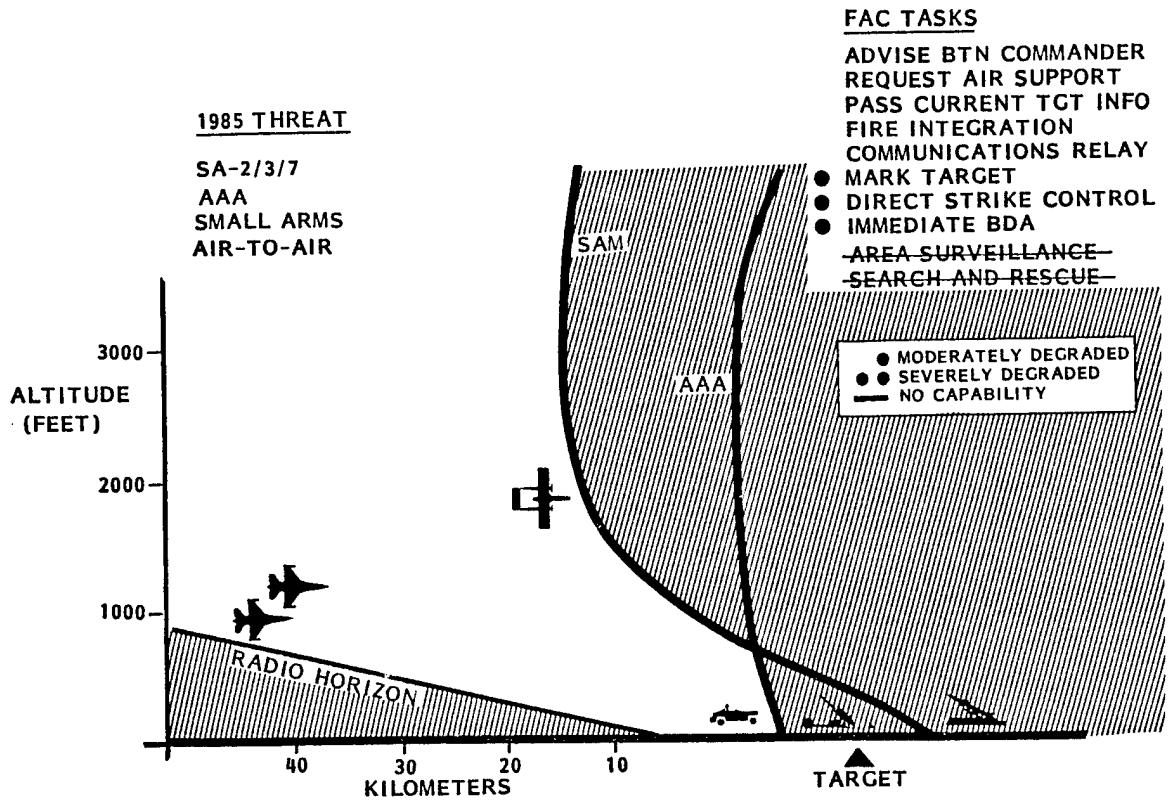


FIGURE 5 - MODERATE THREAT AREA (1985)

In the High Threat Area (Figure 6), the Air FAC's operating envelope is restricted even further. Improved surface-to-air missiles, as well as enemy aircraft, force the air FAC to fly at greater distances from the target and at lower altitudes. Although HAVE QUICK radios have proved to be very effective against current communications jammers, the air FAC will likely encounter radio communication difficulties because he is at lower altitudes and further from the ground FAC. The increased threat significantly reduces the air FAC's ability to mark the target, direct strike control, and assess battle damage. In this threat environment, emphasis shifts to the ground FAC to accomplish the required tasks. However, not only is the ground FAC limited in mobility and visibility but he may also be faced with intense ground threats. Chemical weapons, artillery, air-to-surface attacks, and small arms could all play a role in reducing the ground FAC's operational capability. In a sustained high threat area, the FAC team could be severely limited in what tasks it actually could accomplish.

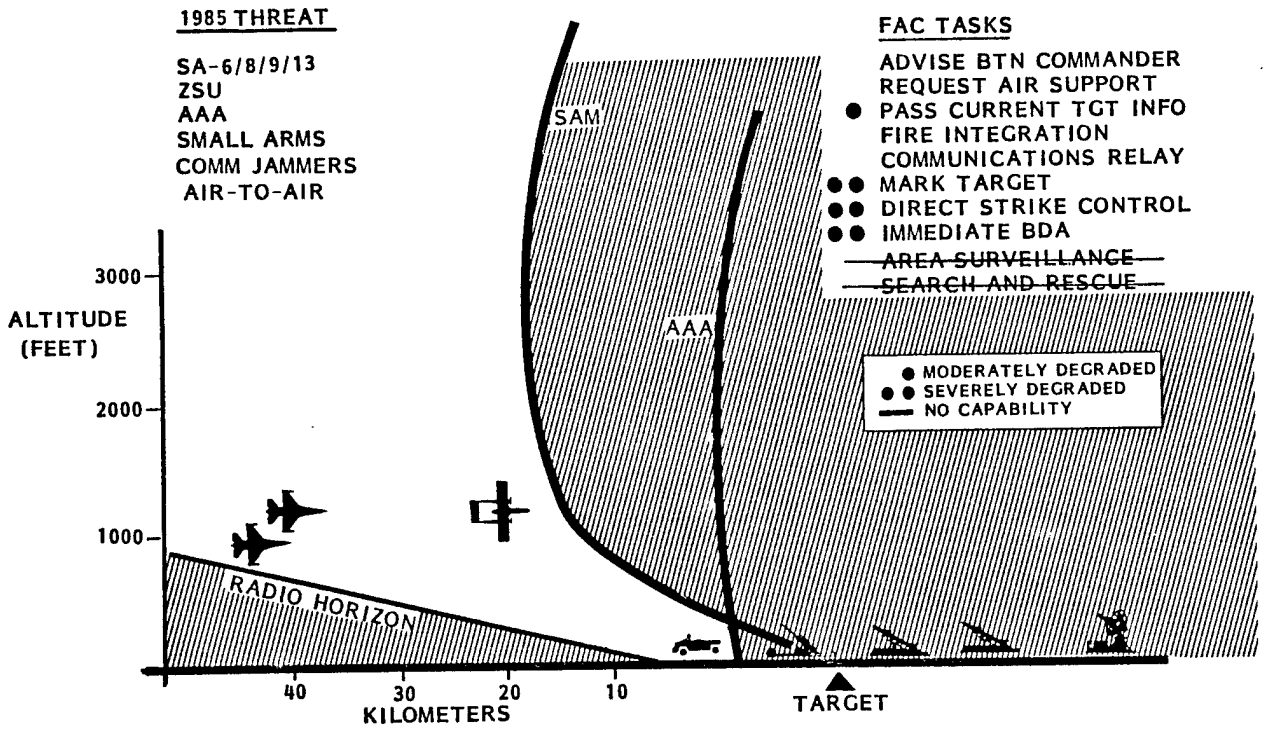


FIGURE 6 - HIGH THREAT AREA (1985)

SECTION III - FUTURE FAC ALTERNATIVES

This section presents three alternatives for performing the decentralized execution of CAS sorties that today is provided by the FAC team. Alternative #1 places the FAC team, with today's equipment, against the threats expected in 1995. Alternative #2 briefly discusses new systems that are in various stages of development that might affect the capabilities of and requirements for a FAC. The FAC team is then enhanced with several of these systems and evaluated in a 1995 threat environment. Alternative #3 assumes some technologically advanced systems are available and proposes replacing the battalion FAC team with Army elements.

ALTERNATIVE #1

Alternative #1 places the FAC team, as equipped today, against the moderate and high threats expected in 1995. The purpose is to show graphically that today's FAC team can still function, even if only to a limited degree, in varying 1995 threat environments. It is not likely the FAC team will have the identical equipment in 1995 that it has today. However, it is possible that the systems possessed by the FAC in 1995 may only be improved versions of existing equipment.

As shown in previous depictions, survivability determines the FAC's operating envelope. Figure 7 depicts threats which might be encountered in a moderate threat area. Note that the overall threat environment remains relatively unchanged from today's moderate threat environment except for the addition of a mobile SAM system and a few current-technology communications jammers.

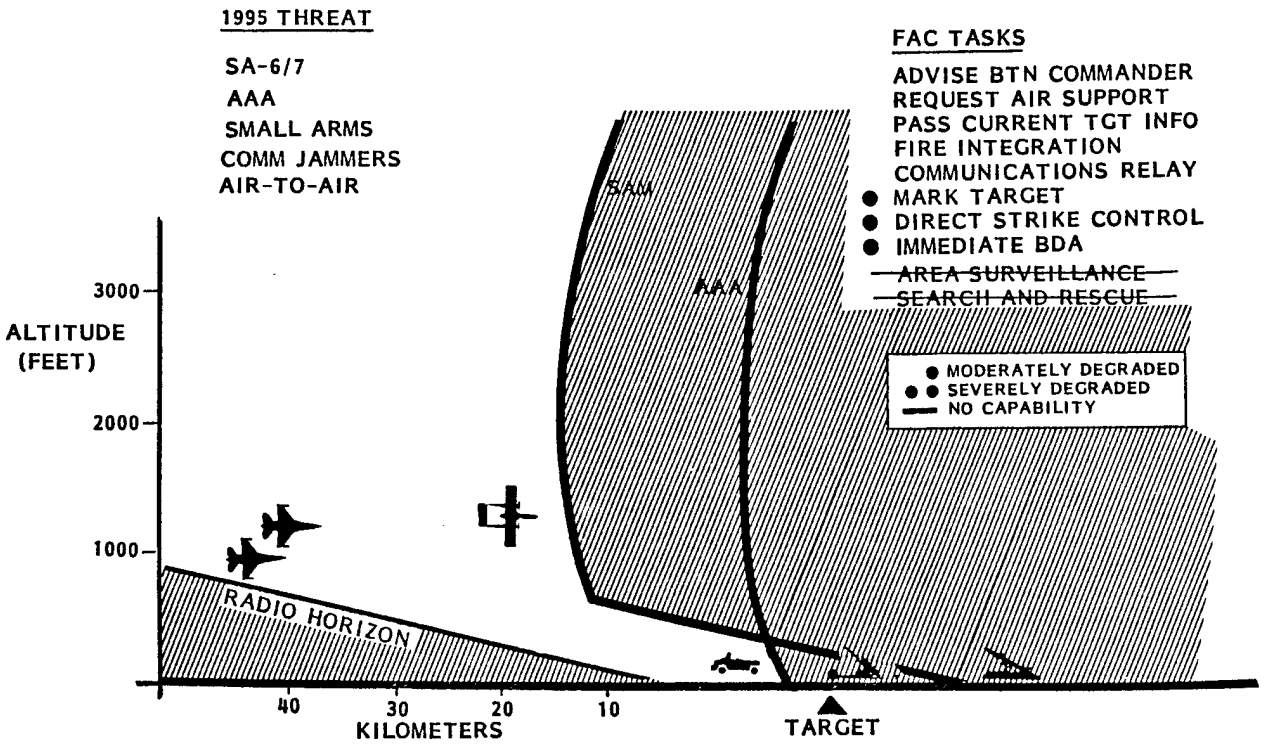


FIGURE 7 - MODERATE THREAT AREA (1995)

Figure 8 shows what we believe could be the high threat environment in 1995. Increased lethal ranges of SAMs and the increased air-to-air threat will no longer allow unlimited use of higher altitudes at moderate distances from the FEBA. Lower operating altitudes will moderately degrade the communications relay capability of the FAC. Possibly the most limiting factor in this environment will be sophisticated communications jammers. The space enclosed by the dashed lines depicts an area where the air FAC must stay in order to maintain two-way radio communications with the ground FAC. Although the "AJ Comm Area" shown is notional, it is reasonable to believe that the enemy has the technological capability to produce jammers by 1995 which could severely degrade present anti-jam radios. As can be seen by the dotted lines, the air FAC is forced into a very small operating envelope in order to survive and to maintain air-to-ground communications with the ground FAC. Not represented in Figure 8, but of similar importance, is the radio link between the air FAC and incoming CAS aircraft. In order to communicate with these aircraft the air FAC must position himself close to the fighters in order to to burn through the jamming. In this environment, the air FAC would have to position himself close enough to the ground FAC to receive a target briefing, then fly toward a prebriefed contact point, establish communications with the fighters, and then relay the target briefing to them. This procedure is not only time consuming, but also inefficient and requires detailed coordination.

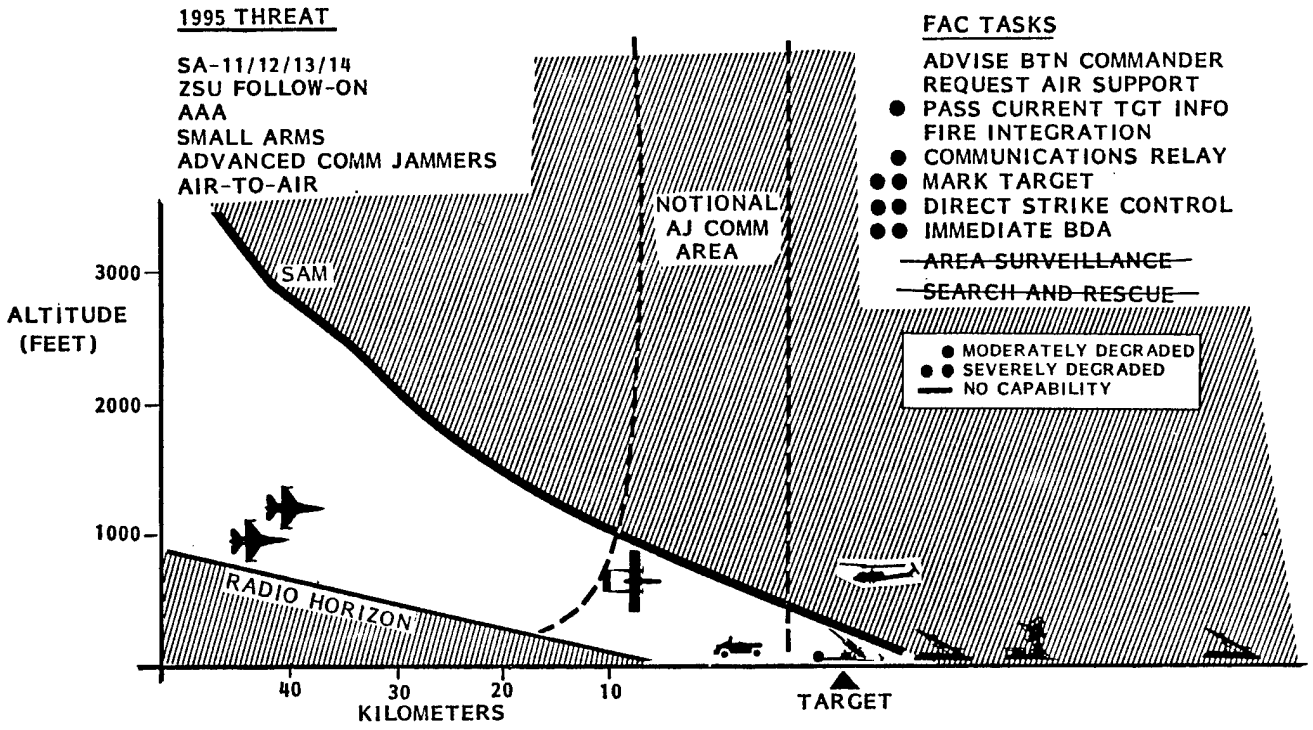


FIGURE 8 - HIGH THREAT AREA (1995)

ALTERNATIVE #2

Figure 9 lists several new systems being developed that could assist the FAC team in accomplishing its mission. The blocks marked with an "X" indicate that portion of the CAS cycle that might be affected by each new system.

CAS CYCLE	FUTURE SYSTEMS: ENHANCED JTIDS (EJS)	AQUILA	JSTARS	GPS	DCT	ATHS	LANTIRN
GROUND THREAT PERCEIVED		X	X				X
REQUEST FOR AIR SUPPORT	X				X	X	
DECISIONS MADE - (IF, HOW?)			X				
AIRCRAFT LAUNCHED/DIVERTED			X				
AIRCRAFT RECEIVE CURRENT TARGET INFO	X	X	X		X	X	
PILOT/WEAPON "SEES" TARGET		X	X	X		X	X
WEAPONS DELIVERED			X	X		X	
ASSESS NEED FOR REATTACK		X	X				X

FIGURE 9 - FUTURE SYSTEM INTERACTIONS

The Enhanced JTIDS System (EJS), will expand communication capability in a future communications jamming environment. Communications are, and will continue to be, a vital factor in effectively accomplishing the CAS mission.

The Army Aquila is a remotely piloted vehicle (RPV) that will be an extension of the battle commander's eyes. Through a two-way data link, the operator will have current target information, can designate the target with a laser, and can immediately assess battle damage with electro-optical and infrared sensors. The RPV may be able to operate in those high threat areas which will be closed to the air FAC. Although the logistics of this program are large, it is conceivable that RPVs may play a major role in battlefield management.

Joint Surveillance Target Attack Radar System (JSTARS) could be used to provide fighters with near-real-time (NRT) target information updates of mobile targets. JSTARS would allow commanders to direct large numbers of fighters to specific targets, and could provide the timely target status reports needed for reattack decisions.

The Digital Communications Terminal (DCT) and the Advanced Targeting Handling System (ATHS) are systems being developed by the the Air Force and Army respectively. Both systems are compact modems capable of transmitting tactical information in digital format over most current VHF and UHF radios.

The Global Positioning System (GPS) is a satellite-based system that will give continuous geolocation, and do it with pinpoint accuracy. Conceivably, with all CAS players having GPS, precise target location information could be passed through a DCT or ATHS from either a ground or airborne FAC directly to the attack aircraft with minimum verbal radio transmissions. Such future enhancements could greatly increase the effective coordination of CAS.

LANTIRN is a system that will help the pilot get to the target area while ingressing at very low altitudes, at night, or in bad weather. It could aid the FAC in identifying the target and the fighter in acquiring and destroying it. Lastly, LANTIRN could help the FAC assess battle damage and, if needed, direct a reattack. Initial operational capability (IOC) for LANTIRN is expected in 1990. It will be installed in F-16s, A-10s, and F-15Es. It is not presently proposed for FAC aircraft, but a LANTIRN/FLIR device might be considered for a FAC aircraft in the future.

Figure 10 illustrates the operations of the enhanced FAC team and shows the possible interaction of these systems. In this alternative, because of the numerous uncertainties, no attempt has been made to rate the FAC team's

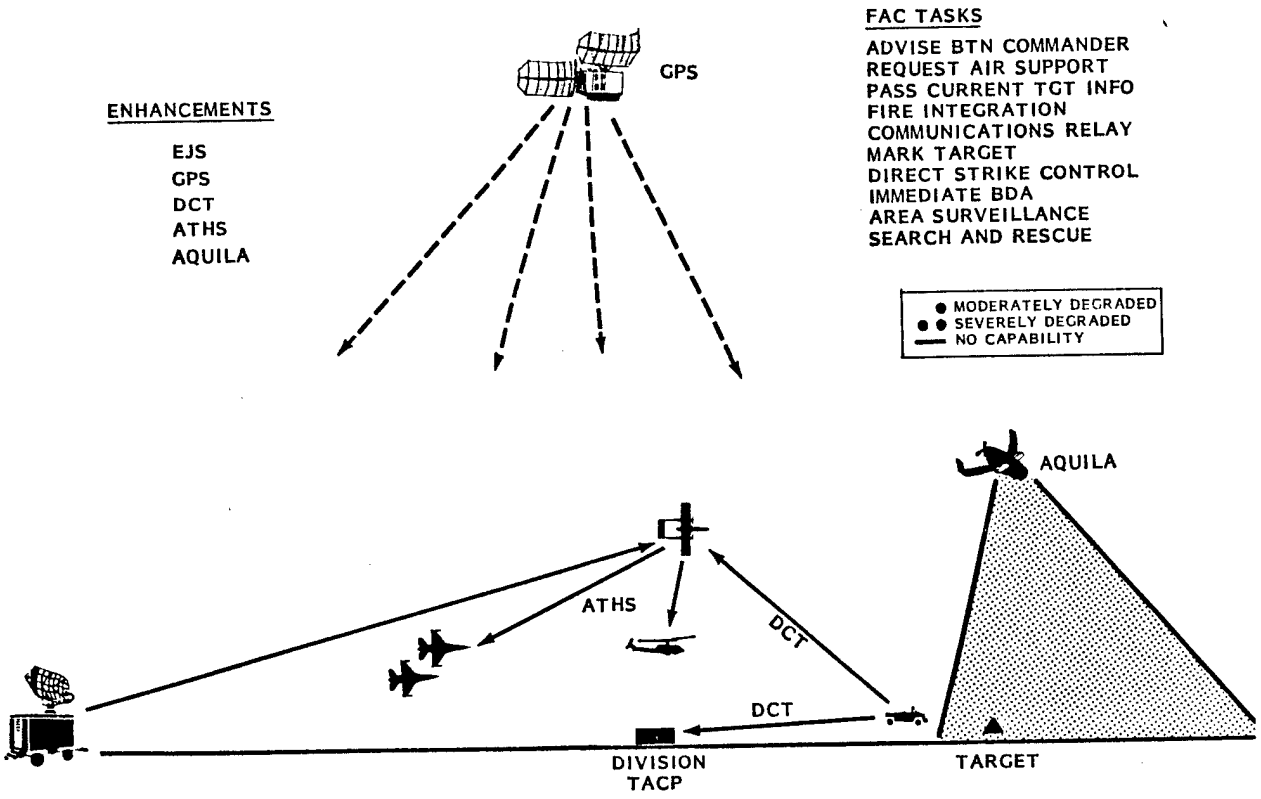


FIGURE 10 - Enhanced FAC Team (1995)

ability to accomplish its tasks. The FAC team effectiveness will be dependent not only on the level of threat but also on which new systems are acquired and their method of employment. The FAC aircraft shown on the depiction is generic. It could be similar to today's FAC aircraft, or it may have a reduced radar cross section and be equipped with self-protection systems.

The interaction of these systems might provide an all-weather day/night attack capability as a backup to the primary mode of visual attack. The target could be identified and precisely located by a FAC through the use of a laser range finder and GPS. The FAC would then send the target information digitally through a DCT or ATHS to a control agency, a fighter aircraft, or both. The fighters, such as F-16s, also equipped with GPS, would now have accurate target location and could deliver weapons from a level delivery without visual target acquisition. While this method might not be precise enough to kill individual tanks with MK-82s, it provides an alternative attack capability against some classes of targets with suitable weapons. This means that targets, difficult to see from a fast moving aircraft, could be killed under cover, at night, or in bad weather. Fighters could minimize exposure time to enemy defensive systems by ingressing at low altitude and making a level delivery. Without having to "pop" for target acquisition, fighter attrition could be reduced.

ALTERNATIVE #3

In the next ten years the Army will undergo a significant reorganization. They are moving toward larger numbers of smaller, more maneuverable combat units. They expect to purchase over 650 Apache (AH-64) attack helicopters, which will increase their air-to-ground firepower, and they have plans to improve their air-to-ground capability with the development of the follow-on light attack helicopter (LHX). The command and control of these helicopters will be improved with the upgrade/replacement of their Scout helicopter. In the future, the Scout will have a day/night capability to acquire and designate targets, be able to pass target information to ground and airborne units, and be able to control a fully coordinated attack.

Doctrinally, alone or on joint attack (JATT) missions, the attack helicopters are controlled by the Scout helicopter which identifies targets and coordinates the attack with ground maneuver and fire support units. The Scout accomplishes much the same role and tasks for Army air-to-ground attack as the FAC team does for Air Force CAS.

Figure 11 explores the concept of the Army performing the battalion FAC tasks. Historically, two of the chief functions of the FAC were to be a liaison between the Army and the Air Force, and to communicate essential information to CAS aircraft in terms that the Air Force pilots could understand. With systems such as EJS, GPS, ATHS, and lasers, specific targets could be identified and marked to pilots without a single verbal radio transmission. Properly trained personnel could pass the target information to specifically identified attack aircraft. The aircraft would receive their initial target briefing from an Air Force liaison officer operating from the division or brigade TACP, or perhaps from an airborne platform if needed to enhance communications. The final target briefing would be passed by the Army Scout helicopter through a digital heads-up display provided by ATHS. The exact target location could be identified to the pilot by precise GPS-provided coordinates or by a laser designation from either the Scout helicopter or from the ground.

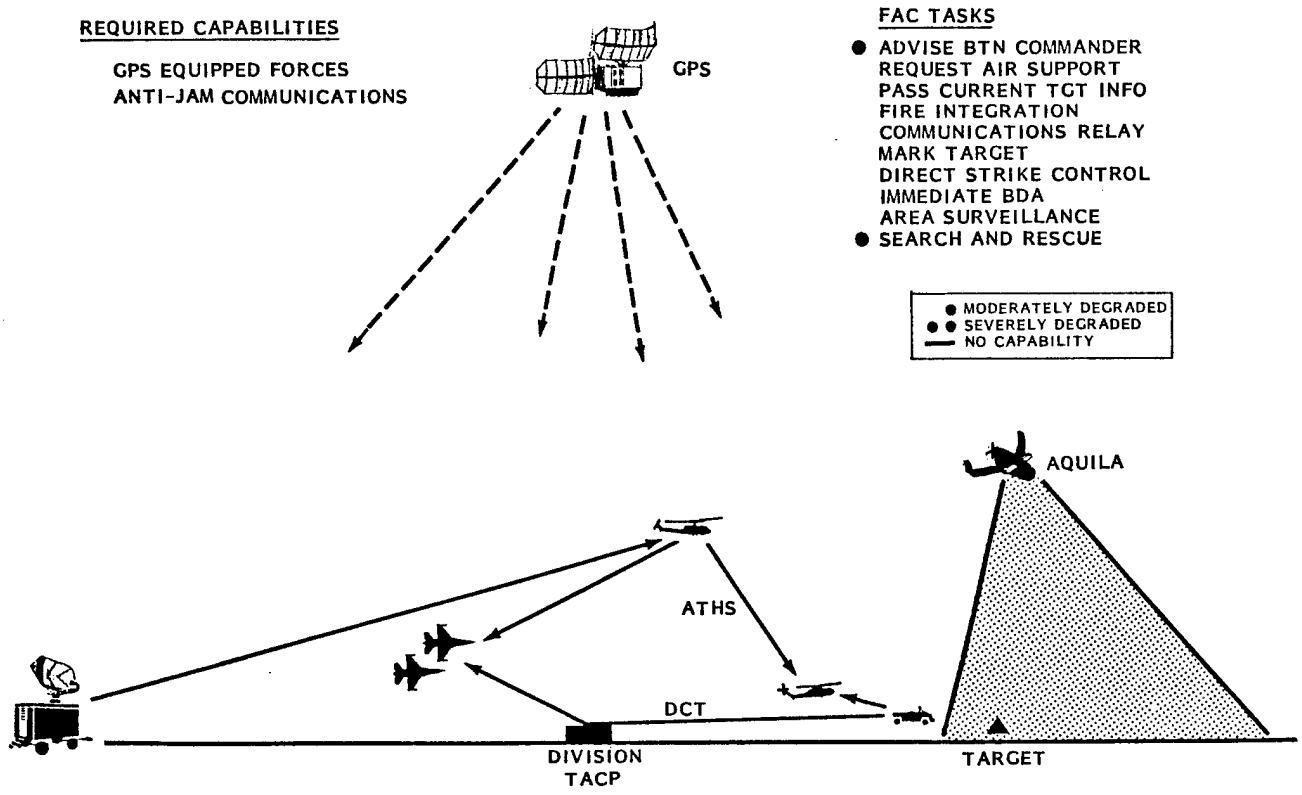


FIGURE 11 - ARMY FORWARD AIR CONTROLLERS (1995)

Notice that Figures 10 and 11 are virtually identical. The only difference being that in Alternative #3 the Army Scout helicopter and the ground Fire Support Element (FSE) perform the tasks of the FAC team. Although this concept may appear somewhat revolutionary, it merits additional comment, study, and testing.

When the Air Force and the Army agreed, in March 1965, to the TACP concept, the Army was limited in its knowledge and ability to conduct a CAS-type mission. They possessed little air-to-ground capability or the command and control system required to make it work. Now however, with their planned increase in air-to-ground capability, the Army is developing new concepts of operations. Many of the tasks performed by today's FAC team will also be accomplished by the aviation battalions that are assigned to each maneuver division. The control aircraft the Army uses might be able to direct both attack helicopters and Air Force CAS aircraft to targets.

Section IV - FAC Aircraft Evaluation

The discussion to this point has focused on the role of today's FAC team across the threat spectrum and some systems which may affect how the FAC team does its job in the future. In this section the assumption is made that a FAC aircraft will be required in the future. A subjective evaluation of several candidate FAC aircraft follows.

Our current FAC aircraft (O-2, OV-10, OA-37) suffer many common problems. Aircraft performance, poor night/weather capability, nonexistent self protection systems and outdated navigational equipment are but a few of the problems that need to be addressed. The average age of the current FAC aircraft is 17 years. They are becomming more difficult and costly to support. Considering these limitations, it is apparent, assuming a FAC aircraft is required in 1995, that a replacement should be identified in the near future.

The following comparison of several possible platforms assumes the air FAC must perform the tasks outlined in Sections I and II. The aircraft requirements selected were based on previous reports and discussions with operational personnel and are likely not all-inclusive. The aircraft were rated through subjective analysis. Following is a list of those requirements and a brief explanation of each.

1. Ferry Range - Capability of aircraft to deploy long distances.

2. Reaction Speed - Speed at which the aircraft can fly to and from a designated area.

3. Loiter - The time each aircraft can remain over a target area 100 miles radius from home base.

4. Visibility - Pilot's air to ground visibility.

5. Reconnaissance Ability - Ability to observe ground positions with minimum maneuvering, while remaining close to a fixed ground position.

6. Growth - Capability of each aircraft to accept new systems (ie; Have Quick, RWR, ATHS, DCT, etc.).

7. Current Night Capability - Does the aircraft have the capability to perform its mission at night?

8. Current Navigational Ability - Does the aircraft presently have accurate navigational equipment such as TACAN, INS, or GPS?

9. Current Communications Equipment - Does the aircraft have the capability to adequately communicate with necessary command and strike elements, (UHF, VHF/AM-FM, HF)?

	A-10	OV-10D	OA-46	SCOUT
FERRY RANGE (NM)	AAR	2100	2740	250*
REACTION SPEED (KTS)	300	260	325	100
LOITER TIME (HRS)	1.5	3.0	1.3	0.5*
VISIBILITY	E	E	F	G
RECCE ABILITY	G	E	G	E
GROWTH CAPABILITY	E	E	G	E
NIGHT CAPABILITY	E	G	G	E
NAV EQUIPMENT	E	G	G	E
COMM EQUIPMENT	G	E	G	E

E = EXCELLENT
G = GOOD
F = FAIR

Figure 12 - Aircraft Comparison

*Helicoptors could be staged and refueled very close to the FEBA. This should be taken into consideration when evaluating reaction speed and loiter ability.

A-10: Is a twin engine, single seat aircraft whose primary role is close air support. Depending on the configuration, it can loiter for approximately 1.5 hours. Reconnaissance ability is somewhat limited due to operational speeds required for maneuverability and survivability. The A-10 has excellent visibility, can be air refueled, and not only has self-protection capabilities, but also the room for technological expansion. It has an INS and is programmed to receive LANTIRN. The communications available on the A-10 include a UHF and a VHF/FM radio.

OV-10D: Is a twin engine two-seat turbo-prop aircraft. It is a modified OV-10A which has been used by the Air Force as a FAC aircraft for many years. The aircraft is not inflight refuelable and its ferry speed hampers its ability to reach hostilities of any great distance in a timely manner. The OV-10D's slow speed characteristics give it an excellent reconnaissance ability. The visibility is excellent, and the aircraft can remain on station for three-plus hours within 100NM of home base. The aircraft has substantial growth potential. The aircraft does not have a FLIR or LANTIRN and would be limited to a radio relay role at night or in weather. The communications capabilities of the OV-10D are excellent; it carries UHF, VHF/AM-FM, and HF radios.

OA-46: Is a modified version of the T-46 trainer. The side-by-side seating arrangement limits pilot's visibility. Although not inflight refuelable it will be capable of flying 2,740 NM with external fuel tanks. The reconnaissance capability is good, limited only by the maneuvering speed flown in the target area. Loiter capability is only 1.3 hours in the proposed FAC configuration. The OA-46 has some room for growth. However, the A model is thrust limited, and extra weight would probably decrease its performance. The aircraft does not have an INS, and without a FLIR or LANTIRN it would be limited to radio relay at night or in weather. The OA-46 carries a UHF and a VHF/AM-FM radio.

Scout AHIP (Advanced Helicopter Improvement Program): Is an updated version of the OH-58. Its ferry range is poor and in most cases would require air transportation. At less than 200 knots, the reaction speed is less than desired, and when considering a 100NM radius to the FEBA, the loiter time is poor. However, helicopters would most likely be staged and refueled very close to the FEBA making their reaction speed and loiter time less limiting. Although it has side-by-side seating the visibility was rated good because of visibility enhancing equipment. The hover capability gives the Scout an excellent reconnaissance ability. The Scout has a host of self protection devices and a FLIR which will increase its night capability. The Scout will have a doppler navigational system, and has room for technological growth. The Scout (AHIP) carries a UHF, HF, and two VHF/FM radios.

In the subjective evaluation of future FAC aircraft, note that a "best aircraft" for the job was not chosen. A more detailed analysis on the capabilities of each aircraft is required. The analysis should also evaluate cost, training required, maintainability, and the ability to function from short/unimproved airfields.

As mentioned previously, enhancements improve effectiveness, capability, and survivability. The FAC aircraft of the future must be able to incorporate these enhancements in order to increase, or at least maintain its effectiveness.

CONCLUSIONS

This paper has taken a subjective look at the FAC role. We have reviewed history and shown why the FAC has been a significant factor in an effective close air support system. We then evaluated the FAC's strengths and weaknesses in varying threat environments of 1985 and 1995. Lastly, we briefly looked at possible alternatives for accomplishing the FAC mission. The conclusions of this white paper are:

1. The FAC team performs a necessary and vital function in today's close air support mission. Effective CAS requires a coordinated CAS cycle. In most instances, the CAS cycle would be less effective if a FAC was not involved.

2. The FAC team will be able to function in all future threat environments. Keeping in mind that threat levels are continually changing, we show that the FAC team has some utility in all environments. To consider only the highest threat environments when considering the worth of the FAC would be a mistake.

3. Future enhancements could help in effective accomplishment of close air support. Technological advancements will not only aid the battle commanders in winning the war, but they will also expand the abilities and operating envelopes of the FAC team. There appears to be a high payoff in pursuing those systems that improve target location estimation and data transfer to fire units.

4. The Army may be capable in the future of performing the FAC role. This alternative should be researched further. This paper merely identifies that the Army already performs many of the tasks required for the successful completion of the CAS cycle. Presently they are developing and buying attack helicopters which will be very capable on the battlefield and many of the steps and tasks required for the employment of these new weapon systems will be very similar to those missions performed by the FAC team.

5. If the Air Force develops a new FAC aircraft, an in-depth study should be completed to determine which aircraft is best suited to fulfill air FAC requirements. To be effective, the aircraft must be compatible with Army systems and have sufficient room for future technological growth.